IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Baggett et al.   Art Unit : 2166
Serial No. : 09/431,366   Examiner : Khanh Pham
Filed   : November 1, 1999   Conf. No. : 8583
Title   : METHOD AND APPARATUS FOR PROVIDING AVAILABILITY OF
             AIRLINE SEATS

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
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<u>REPLY BRIEF</u>

Pursuant to 37 C.F.R. § 41.41, Applicant responds to the Examiner's Answer as follows:

In prefatory remarks, the examiner selectively quotes from Appellant's specification intermixing the examiner's characterization of what is Appellant's invention. Appellant contends that is improper and presents a view of Appellant's invention that is neither directed to the subject matter defined by the claims nor a proper reading of the specification.

Specifically, the examiner stated:

> The examiner quotes Appellant's specification notes that the availability data is expected to change slowly and live availability query to the airline can be costly in both time and money (Appellant's Specification page 13 lines 1-11) and proposes "[1]a cache is inserted between the travel planning system and the source of availability data (i.e., airline's database) so that the travel planning system can query the local cache for seat availability information instead of the airline's database to reduce time (i.e. connection time via the network) and money (i.e., fees paid to the airline for database access). Since the availability data is changed as other customers reserved seats or flights are added or canceled (Specification page 14, lines 27-32), which cause the data in the cache become stale, meaning that the information in the cache is not correct, current, complete (Specification page 3, line 18-19).
>   Appellant's invention is therefore directed to method for managing information in the cache to make sure that the information is correct, current, complete by proactively (i.e., periodically) determining if the information is stale based on a criterion (e.g. elapse time since the information is stored, see Specification page 11, lines 10-15), and sending an availability query direct to the airline's database (Specification page 11, lines 27-32), if it is determined that the information in cache

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[1] The examiner uses an initial quotation mark to address this argument. Appellant is not able to find the closing quotation mark. It appears to Appellant that the examiner has not quoted Appellant's specification verbatim.

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> is stale which would result in incorrect or incomplete information returned to the
> travel agent making query to the cache. (footnote added)[2]

Rather, Appellant stated: that "a cache is inserted between the travel planning system and the source of availability data. Furthermore, a cache manager 150 is inserted between the availability cache 152 and the source 20c of availability data, to proactively populate the cache 152 to maintain a high quality level of data in the cache 152 for quick and easy access by the travel planning system 10."

It is a mischaracterization of the claimed subject matter to argue that Appellant proposes: ""a cache is inserted between the travel planning system and the source of availability data (i.e., airline's database) so that the travel planning system can query the local cache for seat availability information instead of the airline's database ...." This juxtaposition of the quote and the examiner's characterization improperly mischaracterizes the teachings of the specification and the claimed subject matter for reasons discussed below.

Claims 1-18 and 30-32 are directed to statutory subject matter under 35 U.S.C 101

The examiner argues that: "a claim is for a practical application of an abstract idea, law of nature, or natural phenomenon when the claimed invention "transforms" an article or physical object to a different state or thing, or when the claimed invention produces a useful, concrete and tangible result. See MPEP 2106, subsection IV.C.2."[3] Appellant has clearly pointed out the useful, concrete and tangible result.[4]

The examiner argues that:

> The claimed invention as recited in claim 1 is directed to a method or process
> comprising two steps:
> • determining if a stored answer in the cache is stale;
> • sending an availability query to a source if the cache is stale.[5]

Claim 1 with all of the limitations is reproduced below:

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[2] Examiner's Answer page 15.
[3] As stated in the Interim Guidelines
[4] Appeal brief page
[5] Examiner's Answer page 17.

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1. A method executed on a computer system for managing a
cache including entries that correspond to seat availability
information, the method comprises:
    proactively determining if a stored answer in the cache is stale,
the stored answer corresponding to seat availability information for
a seat on a mode of transportation, with determining being based
on a criterion for seat availability information, which criterion is
determined based on needs of a travel planning system that makes
queries to the cache for obtaining the seat availability information;
and if the stored answer pertaining to seat availability information
is stale,
    sending an availability query to a source of seat availability
information for the mode of transportation based on determining
that the answer was stale.

Clearly, the useful, concrete and tangible result is "management of a cache of seat

availability information" as argued. The claimed features do positively recite how the cache is

managed, namely by proactively determining if the stored answer is stale, ... based on the needs

of the travel planning system. In addition, "sending query to a source of availability information

based on determining ... " is also useful, concrete, and tangible. The examiner's argument that

"... "sending query to a source" is not concrete nor tangible because, as recited in the claim, this step is optional

because it only perform if the condition is satisfied (i.e. "if the cache is stale"),"[6] is improper, since there is no

requirement that a method claim must have all steps performed at all times, not allowing for any

conditions. Moreover, if the examiner truly felt that: "it is unclear how the sending query step

relates to "managing a cache" as recited in the preamble.", then the proper course would have

been to reject the claims under 35 U.S.C. 112, second paragraph. However, as Appellant has

pointed out, the broad features of how the cache is managed are clearly recited in the claimed

actions.

Claim 5-18

The examiner maintains that: "Regarding claim 5-18, appellant argued that claim 5 is statutory because

it is directed to a system which includes two physical articles, a cache and a cache manager. However, appellant's

specification does not provide any teaching which show that a cache manager is implemented in hardware, and page 12,

line 1 provides that a cache can be implemented using software cache."[7]

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[6] Id.
[7] Id.

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Appellant contends that there is ample support in the specification for a physical implementation of an availability system. See for instance: "The system 10 also includes an availability predictor 65. The availability predictor 65 can be based upon a cache or database of stored availability queries, a predictive model of availability and/or a simulation of an availability process or an actual availability process running as a local process to the server process 12."[8] The clients are coupled to the server 12, via a network 22, that is also used to couple the remote resources 21a-21b that supply databases 20a, 20b to the server 12.[9] In an alternative arrangement, the availability predictor 65 can be part of the client process 36.[10]

Claim 23 is directed to "A computer program product residing on a computer readable medium for determining seat availability in a travel planning system, the computer program product comprising instructions to cause a computer to:" Claim 23 is directed to an embodiment of the cache manager implemented in software.

The examiner argues that both claim 5 and claim 23 are directed to non-statutory subject matter because Appellant claims both a system and a computer program product. Appellant contends that there is no authority for the proposition that an applicant for a patent must limit his invention to one statutory class of invention.

Appellant also contends that there is no authority for the examiner to argue that

> ... Further, claim 23 provides evident that the cache manger is implemented using computer instructions, or software. The system of claim 5 is therefore comprise two software components, or software per se and therefore non-statutory. Dependent claims 6-18 do not correct the deficiency of claim 5 and are also rejected.[11]

Claim 23 is not directed to software per se, but to: "a computer program product residing on a computer readable medium comprising instructions for causing a computer to ... ." The program of Claim 23 is fixed in a tangible medium. However, Appellant is at a loss to understand the rationale and authority upon which the examiner can properly argue that two

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[8] Appellant's Specification page 5, line 24.
[9] Id. line 32.
[10] Id. page 6, line 11.
[11] Examiner's Answer page 17

independent claims, clearly directed to different statutory classes, can be combined to render both sets of claims non-statutory.

The examiner has not quoted any authority that supports any of these novel legal contentions, whereas Appellant has set forth several authorities in the Appeal Brief that amply support Appellant's position that the claimed subject matter is statutory.

Accordingly, the claims are directed to statutory subject matter and the examiner should be reversed.

Claims 3 and 4 are described and enabled under
35 U.S.C §112, first paragraph

Appellant stands by the arguments in the Appeal Brief, except to point out that admission that the steps in claim 3 are directed to how the cache is updated was not the point of Appellant's argument. Rather, the point was that the steps in claim 3 were part of determining. Appellant argued that:

> The steps in claim 3 are directed to how the cache is updated, which Appellant can consider for the purposes of claim 3 and 4, as part of determining if the stored answer is stale. Alternatively those steps could be considered separate from determining as in certain of Appellant's other claims. Appellant's specification does not impose any specific requirement on an order in which these steps would be performed and it is improper for the examiner under the guise of an enablement rejection to impose what the examiner believes that the order should be.[12]

The examiner concludes that "Claim 3 is therefore fails to comply with the enabling requirement because the specification does not explain how to determine if the cache is stale by updating the cache ??? ."[13] However, that is not what is claimed in claim 3. Claim 3 recites that the action of "determining" includes the recited features, not "to determine if the cache is stale by updating the cache, ... " as the examiner argues.

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[12] Appellant's Appeal Brief page 14.
[13] Examiner's Answer page 18

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The examiner's reasoning "After updating, the stored answer in cache is always NOT stale, and therefore the if condition recited in claim 1 will never be satisfied.",[14] is also improper since it requires that updating always occurs before determining and of course that is not what is recited in either claim 1 or claim 3.

The examiner also undertakes an analysis involving "[R]ewriting claim 3 in independent form ... ."[15] Appellant contends that this analysis is faulty, since rewriting claim 3 in independent form including all of the limitations of the base claim, would not result in "replacing the determining step in claim 1 with the steps of claim 3"[16] but rather would add those steps to the steps found in claim 1. It is elemental claim drafting principles that a dependent claim limits its base claim and includes all of the limitations of the base claim and any intervening claims. To merely "replace" the feature of determining with the features of claim 3 would not limit the base claim 1, but instead would be an improper construction of claim 3. Therefore, this reasoning is also improper and claim 3 and by analogy claim 4 are enabled.

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**Claims 1, 5, 19 and 23 are not anticipated by
Lynch et al. (US 6,839,679).**

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Claim 1

The examiner states: "Regarding claim 1, appellant argued that Lynch does not teach any claimed limitation." Appellant did not argue this.[17]

The examiner compares: "Lynch's system as shown in Fig. 1 to Appellant's system as shown in Fig. 7 clearly show the similarity between two systems, where the database 14 is mapped to the cache 154, Decision Engine is mapped to cache manager 150, CRS 24 is mapped to source data 20c and incoming and best price is mapped to query and

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[14] Id.
[15] Id.
[16] Id.
[17] Appellant argued:

> Claim 1 is neither described nor suggested by Lynch, since Lynch fails to describe or suggest at least ...proactively determining if a stored answer ... is stale, the stored answer corresponding to seat availability information ... with determining being based on a criterion for seat availability information ...determined based on needs of a travel planning system that makes queries to the cache ... and if ...stale, sending an availability query to a source of seat availability information ... . (Appeal Brief page 15).

answer."[18] Appellant contends that this mapping is superficial and neither relevant nor useful to ascertain whether Lynch describes or suggests claim 1.

The examiner equates the database 14, as taught by Lynch at Col. 3 lines 33-40 and Fig. 1, to the claimed feature of "a cache including entries that correspond to seat availability information." The examiner argues that the inventory information from the computer reservation systems 24 correspond to seat availability information. Specifically, the examiner argues that:

"Clearly, the database 14 stores airline inventory data retrieved from the computer reservation system 24 (CRS), and therefore same as claimed "a cache including entries that correspond to seat availability information"."[19] Appellant contends that there is nothing in that passage that corresponds to the claimed cache including entries that correspond to seat availability information.

The examiner further argues that: "Appellant's specification also describes the cache as a database storing information retrieved from an airline reservation system at page 11, lines 28-32 reproduced below:

"The answer that is received from the airline availability system 66 is returned as the answer and can be used to update the database 70. The database 70 can be implemented using various approaches including hierarchical, relational or object oriented database, or alternatively, a software or hardware cache. (Appellant's specification)"[20] Appellant contends that the examiner conflates two unrelated topics. While Lynch teaches to secure inventory information from a CRS (computer reservation system) Appellant in the specification discloses to obtain seat availability information ("the answer" referred to in that passage) from an airline's availability system 66. The seat availability information is an answer computed by the airline availability system, which determines whether or not an airline will sell a ticket for a given itinerary and fare based on many factors. In contrast, Lynch describes "inventory information" as the flights and fares that are presently offered in the industry. While Appellant previously conceded that systems like Lynch would make use of seat availability information[21], there does not exist any teachings in Lynch that Lynch holds a cache of seat availability entries.

The examiner disagrees with Appellant's characterization of what is held by inventory information disclosed by Lynch. Specifically, the examiner argues: "Appellant further argued that "inventory information" disclosed by Lynch is flight, fare and fare rule information and not "seat availability" information, the examiner respectfully disagree. Webster's dictionary defines "inventory" as "the supply of good and

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[18] Examiner's Answer page 18.
[19] Id. page 20
[20] Id.
[21] See Appellant's specification Background pages 1 and 2. See also Appellant's Appeal Brief page 14.

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material on hand".[22] Appellant contends that it is improper for the examiner to resort general definitions of terms like "inventory" when the reference itself states what is meant by those terms. The examiner also argues: "For example, inventory of a hotel is room availability information and "inventory information" provide by an airline reservation system is "seat availability" of flights. It is unreasonable to state that Lynch provide flight and fare information but does not provide "seat availability" information because flight and fare information indicates seats of that flight are available for purchase.[23] Appellant however has already addressed this in the context of Appellant's background, when a CRS would check availability of a limited number of itinerary and fare combinations. It is neither necessary nor inherent that Lynch has a cache of seat availability entries.

The examiner also mischaracterizes the reference. Appellant describes that the airline availability system 66 is maintained by each airline.[24] The examiner is mistaken that: "Lynch teaches at Col. 4 lines 45-55 that the source of inventory data is maintains by American Airline."[25] This excerpt[26] from Lynch does not describe that the source of the inventory data is American Airlines. Rather, it merely states that American Airlines owns one of the CRS's, Sabre®.

Appellant maintains that Lynch does not suggest the claimed management scheme nor the cache that a travel planning system can query to obtain the seat availability information.

The examiner also mischaracterizes Appellant's argument regarding the cache management algorithm. To support his contention, the examiner resorts to Appellant's specification. Specifically, the examiner states: "To understand appellant's cache management algorithm, appellant's specification describes:

"The process 94 will determine if the stored answer is stale by comparing the time of the query to a threshold time that can be either a preset threshold such as a certain number of minutes, hours or days or preferably a variable threshold that is determined in accordance with a threshold level predictor" (Appellant's Specification page 11, lines 15)"[27]

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[22] Examiner's Answer page 20

[23] Id.

[24] Appellant's specification page 5, lines 24-24

[25] Examiner's Answer page 21

[26] Lynch states:
> The plurality of computer reservation systems 24 used by the travel agency can be linked electronically with system 10. Each computer reservation system 24 may be one or more commercially available computer reservation systems such as, for example, SABRE®. owned by American Airlines, WORLD SPAN® owned by Pars Marketing Partnership, APOLLO® owned by Galileo International Partnership, or SYSTEM ONE® owned by Amadeus Global Travel Distribution. Computer reservation systems 24 provide on-line travel service inventory information.

[27] Examiner's Answer page 21

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However, the passage quoted by the examiner is not the cache management algorithm[28] that is the subject matter of claim 1, but instead the process that is used to decide whether or not to return an answer from the cache in response to a query sent to the case. So while Appellant's claim is directed to how to maintain the cache, the examiner is quoting from Appellant's specification on how to use the cache.

Therefore, the remainder of the examiner's reasoning regarding Lynch's "cache management" is immaterial to claim 1, since it is clear that Lynch does not teach any cache management that is based on the needs of another system and specifically a travel planning system.

The examiner concludes this discussion of claim 1, by stating: "Finally, appellant argued that Lynch does not teach "if the stored answer pertaining to seat availability information is stale, sending an availability query to a source of seat availability". On the contrary, Lynch teaches at Col. 6 lines 15-30 that if the predetermined time has elapsed (i.e., the store answer in cache is stale), the system 10 is connected to the CRS 24 to read inventory information."[29] In response to this argument, Appellant points out that according to Appellant's specification[30] and the art cited by the examiner[31] one does not obtain seat availability information from a CRS, but instead from an airline's revenue management or yield management system.

Accordingly, the examiner's rejection based on anticipation must be reversed, since the examiner has not shown that Lynch describes all of the features of claim 1 arranged as in the claim.

Claim 5

The examiner argues that: "...Lynch teaches at Col. 5 lines 59 to Col. 6 line 14 and Fig. 3 the step of periodically (i.e. "proactively") updating the cache if a predetermined time has elapsed since inventory information was last obtained from the CRS 24 by obtaining new information from the CRS 24 and stores the obtained information into database 14 (i.e. "cache")."[32] Appellant responds that "periodically" does not correspond to "proactively", as claimed, since any update of information that is merely based on a time

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[28] See Appellant's specification page 12, line 23 to page 13, line 10. Specific strategies to accomplish this are set out from page 13 to page 23.
[29] Examiner's Answer page 23.
[30] Appellant's specification page 1, lines 21-25; page 13, lines 11-14.
[31] See Walker 2005/0177402.
[32] Examiner's Answer page 23

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schedule, as disclosed in Lynch, does not do so based "evaluating entries in the cache according to a criterion related to needs of a travel planning system."

The examiner also argues that "Lynch also teaches "the predetermined time can be set by the user's needs", and therefore anticipates the claimed limitation "based on the need of a travel planning system that makes queries to the cache"."[33] Appellant contends that this teaching does not anticipate the claimed feature, which requires that the "evaluating entries in the cache according to a criterion related to needs of a travel planning system.

Claim 19

Regarding claim 19, Appellant has already addressed the arguments raised by the examiner regarding "proactively populating" and "determined criterion based on needs of a travel planning system that makes queries to the cache."

Claim 19 also includes the feature of predicting availability. The examiner argues that since the preamble recites "managing a cache for predicting availability information", but the body of the claim does not recites any step for predicting or how to predict availability information in the cache. The limitation therefore has no patentable weight and should not be considered."[34] Appellant responds that all limitations in a claim should be considered and that the claim recites the novel features needed "for managing a cache for predicting availability information." As explained by Appellant, the mechanism of the availability cache is a way of predicting what an answer to an availability query would be if a live availability query were sent to an airline's availability system. Accordingly, all of the terms including predicting availability are entitled to patentable weight.

In an alternative argument, the examiner states: "On the other hand, Lynch compares the times with a threshold to predict status of availability information in the cache by presuming that the cache is stale if the predetermined time lapsed."[35] Appellant notes however that "predicting" in claim 19 is directed to predicting availability information, whereas "predicting" in Lynch, according to the examiner's reasoning, is directed to "when to update" the information in the database. Therefore the examiner's argument is not directed to the claimed subject matter. Moreover, the examiner fails to show that Lynch is directed to a "prediction" of anything.

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[33] Id.
[34] Id. page 24.
[35] Id.

Claim 23

Claim 23 includes the features of: "to determine when an entry in the cache should be added, deleted or modified; delete or modify the entry based on determining that the entry should be deleted or modified; and proactively populate the cache by sending an availability query to a source of seat availability information for the mode of transportation based on determining the entry should be added or modified."

The examiner argues that: "On the contrary, Lynch compares the time since the entries are stored in the cache with a predetermined time to determine whether to update entries in the cache (See Col. 6 lines 3-30). Updating data in cache with new data obtain from the CRS involves adding new data, deleting obsolete data and modifying data as claimed."[36] While any update would necessarily involve adding new data or deleting old data (Lynch does not mention modifying data), this reasoning does not address the claimed feature since the feature requires "evaluate entries in the cache according to a criterion" and determine when an entry in the cache should be added, deleted or modified. Lynch neither evaluates entries nor does Lynch evaluate "when an entry should be added, deleted or modified." Lynch merely makes wholesale updates.

Claims 23 and 30 are not anticipated by Walker (US 2005/0177402 Al).

Claim 23

Claim 23 is directed to "a computer program product ... for determining seat availability in a travel planning system and includes instructions to "manage a quality level of the entries ... in the cache by evaluating entries in the cache according to a criterion determined based on needs of a travel planning system that makes queries to the cache for seat availability information, to determine when an entry in the cache should be added, deleted or modified, delete or modify the entry based on determining that the entry should be deleted or modified and instructions to proactively populate the cache by sending an availability query to a source of seat availability information ... based on determining the entry should be added or modified."

Walker does not teach these features, since Walker describes the airline revenue management system. The examiner argues that: "On the contrary. Walker teaches at [0048] and Fig. 2 the

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[36] Examiner's Answer page 25.

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RMS 200 contains a seat allocation database 245 (i.e. "cache entries of seat availability information").[37] Assuming that Walker's seat allocation database can hold cache entries of availability information and assuming that Walker teaches an update process at [0081]-[0082] the update is not based on "evaluating entries in the cache according to a criterion determined based on needs of a travel planning system." Since Walker is describing the airline revenue management system Walker updates it based on changes in sold seats on a particular flight not based on any criterion related to a travel planning system.

The examiner quotation and selective bolding of excerpts from Walker pertaining to the special fare listing has no relevance to the claimed subject matter.

Claim 30

Regarding claim 30, the examiner argues: "On the contrary, as seen in paragraph [0081] reproduced above, Walker teaches the step of monitoring and examining historical data to determine instances of transportation have a high demand for availability information (i.e. "Holiday seasons") and adjusting seat inventory data in the cache accordingly.[38] However, adjusting seat inventory pertains to allocation of inventory among the fare classes as part of the Revenue Management System. Claim 30, in contrast, determines which instances of transportation have a high demand for availability information and proactively updates those entries that have the higher demand. This does not involve any allocation of seat inventory as would be done by the airline RMS system.

Claims 1-3. 5-21. 23-32 are patentable over Mehovic in view of Filepp.

Claim 1 and 9

The examiner misconstrues Appellant's argument.[39] The examiner was taking the position that Mehovic disclosed a CRS, which Appellant pointed out was not described in Mehovic as including a revenue management system. An RMS would be necessary in Mehovic in order for the examiner's argument to have any basis. Appellant is not relying on an RMS in

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[37] Id. page 26.

[38] Id. page 27.

[39] The examiner stated: "Regarding claims 1, appellant argued that "Mehovic fails to disclose that the CRS includes a revenue management system or the like" In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e.," the CRS includes a revenue management system or the like") are not recited in the rejected claim(s) ... ."

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claim 1. Rather, claim 1 avoids the constant need for access to an RMS by the claimed cache and cache management.

Appellant argued that Mehovic is directed to migration of TPF-based (Transaction Processing Facility) CRS reservation data, not data that is used to find a set of flights, fares and whether or not that set of flights and fare will result in an available seat on an airline.

However, as described by Walker and Appellant, Computerized Reservation Systems retrieve seat availability from an airline RMS. Even the examiner admits this in Answer to Appellant's brief: "Walker also teaches: "The inventory and pricing information for both the special fare listing and the actual flights is transmitted by the ASR 150 to the CRS 300...""[40] Walker describes the RMS 100, as including ASR 150, and Walker also describes the CRS 300 as a different system. Therefore, the CSR retrieves seat availability data from an RMS, and accordingly, Mehovic neither describes nor suggests in any combination with Filepp, Walker, Lynch or Appellant's admitted prior art "proactively determining if a stored answer in the cache is stale, the stored answer corresponding to seat availability information for a seat on a mode of transportation, with determining being based on a criterion for seat availability information, which criterion is determined based on needs of a travel planning system that makes queries to the cache for obtaining the seat availability information ... ," as in claim 1.

Mehovic's (passenger name record) does not contain "seat availability information" for the reasons argued of record.

The examiner advances a new line of argument that: "Furthermore, it is noted that theses (sic) differences are only found in the nonfunctional data stored on storage devices. The data identify "seat availability information" is not functionally related to the claimed method. For example, replacing "seat availability information" with equivalent data such as "parking space availability information" does not effect the claimed method. Thus, this descriptive material will not distinguish the claimed invention from the prior art in terms of patentability, see Cf. *In re Gulack*, 703 F.2d 1385, 217 USPQ 401, 404 (Fed. Cir 1983); *In re Lowry*, 32 F. 3d 1579, 32 USPQ2d 1031 (Fed. Cir. 1994).[41]

Appellant contends that the examiner misapplies *Gulack* and *Lowry*. In *Lowry*, the Federal Circuit specifically refused to apply the questionable, so called, "printed matter doctrine" to a data structure that was functionally related to its substrate, a memory, thus forcing the Board

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[40] Id. page 28.
[41] Id. page 29.

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to consider all of the limitations including the data structure limitation when considering patentability of the claims. Here too, "seat availability data" is functionally related to the claimed method in that it controls the steps of the recited method. As the Federal Circuit found in *Lowry*, "Thus, Lowry's claims define functional characteristics of the memory.[42]", here the seat availability information defines functional characteristics of the claimed method.

In addressing lack of suggestion to combine Mehovic with Filepp, the examiner merely repeats the position taken during prosecution and does not address the argument raised by Appellant in the Appeal Brief[43] Appellant reiterates that combining Mehovic with Filepp destroys the intent purpose and function of and indeed changes the principle of operation of the prior art invention being modified and therefore the references are not sufficient to render the claims prima facie obvious." *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). Appellant further contends that this principle was not disturbed by the Supreme Court's recent decision in *KSR International Co. v. Teleflex Inc.*, __ U.S. __, 127 S. Ct. 1727 (Apr. 30, 2007).

Accordingly there is absolutely no basis upon which to so modify Mehovic with Filepp.

In response to Appellant's argument that: "Mehovic does not proactively determine if the cache are stale", the examiner reasons that: "... Mehovic therefore monitors the data in the SABRE system 12 to determine if the cache is stale.[44] While Mehovic does not specifically monitor the data in the SABRE system as the examiner argues, this reasoning is further improper because one of the purposes of the subject matter to avoid querying and monitoring of the airline RMS system. Thus, to the extent that Mehovic teaches monitoring, that would only serve to further distinguish any purported combination of Mehovic and Filepp.

The examiner alleges that "Appellant ... does not explain what the criterion is and how they are different.[45] Appellant contends that these criteria are described in the specification and are the subject of some of Appellant's dependent claims.

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[42] Id. 32 F.3d at 1583; 32 USPQ2d at 1034.
[43] "Indeed, if the desired outcome was to ensure that only the latest version of information in the TPF system of Mehovic was migrated to the RDBMS system of Mehovic, what better way to satisfy that desire than by migrating the data when the data in the TPF system changes, as Mehovic has already taught, since it is the TPF system and not the RDBMS system that knows when updates are available." Brief page 27.
[44] Examiner's Answer page 31.
[45] Id.

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The examiner also fashions an argument that "... if the needs of a travel planning system are current and updated information, then Mehovic anticipates this limitation because Mehovic teach the step of propagating updated data to the cache 20 in order to provide current and updated information to the client 26 which make query to the cache.[46] However, this simplified argument misses the point that the updating in claim 1 is at a cost and the cost is one of the criteria used in determining when seat availability information in the cache are updated. Mehovic has a update or "cache management" algorithm that is merely based on pushing updates from the TPF to the RDBMS as the entries in the TPF change.

The examiner takes an improper position when construing claim 1 by using limitations found in claim 2. Claim 2 seeks to monitor current activity in order to determine demand. This indication of demand is used in accessing what entries to update. It does not follow however, that "An ordinary skill in the art would recognize that if an object in cache in accessed more frequent, the data contained in the object will expired faster and therefore it would requires update from the data source for updated data." Moreover, the examiner's conclusion[47] is nothing more than an improper application of hindsight. Mehovic combined with Filepp only teaches to update when data in the originating systems changes.

Appellant notes that the examiner confuses version testing, as disclosed by Filepp, with proactively updating, as claimed.

Claims 2, 20, 30 and 31

In rejection of claims 2, 20, 30 and 31, the examiner argues that Mehovic teaches: "...a system to provide seat availability information for flights using data stored in a cache 20."[48] The examiner uses Filepp to teach "... a method for updating object stored in a caches based on the frequency of access to the objects in the caches."[49] When the examiner combines Mehovic and Filepp the examiner argues that "... the objects in Filepp's caches should be interpreted as data related to seat availability information as taught by Mehovic. Therefore, Filepp teaches a method of monitor the access to objects to detect the frequency of access to the object, then updating objects in caches to keep them current based on the frequency of access to the objects, when implemented in

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[46] Id.
[47] "For example, if the data for a particular flight is accessed more frequently, the number of available seats are also changed more frequently, therefore updating the flight data from the data source is needed so that the availability information for that flight is updated and current, in order to prevent overbooking or assigning the same seat to multiple passengers." Id. page 32.
[48] Id. page 33.
[49] Id.

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Mehovic system, would result in monitor access to flight data objects (i.e., flight, set of flight, flight for a certain day, market) and high frequency of access to the objects corresponds to high demand flights.[50]

However, as clearly pointed out above, Mehovic does not teach a cache with seat availability information nor does Filepp teach the frequency of access to objects. In addition, there is nothing in the purported combination that suggests to use this indication of demand in determining what entries to update. Recall that Mehovic merely makes a wholesale update of reservation information or at most an update of items that have changed. However, change of the seat availability data is not what is used to manage the cache in claim 2, but rather the frequency of access to the data is an inference of demand and hence the likelihood that the actual answer produced by the airline availability system will have changed.

Claims 3 and 21

Regarding claims 3 and 21, appellant stands by the argument presented in the Appeal Brief.

Claims 5, 7-11, 23-26

Claim 5 recites *inter alia* "... the quality level of the seat availability information in the cache determined by evaluating entries in the cache according to a criterion ... " The examiner chose to ignore this feature. Moreover, the examiner merely chose to rely on the argument presented in claim 1. However, claim 1 does not include all of the features recited in claim 5. Therefore, the examiner has not properly addressed claim 5.

Claim 6

The examiner argues that the Least Frequently Used algorithm disclosed by Filepp deletes least frequently object from the limited sized cache to make room for new entry. The examiner concludes this reasoning by "Therefore, the determining what object to be deleted from cache will lead to determines when an entry should be added to the cache, as an empty space is available in the cache.[51] Appellant concedes that deleting of an object makes room for a new object, but the claim calls for the cache manager to determine when an entry should be added to the cache, not merely because there is empty space in the cache.

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[50] Id.
[51] Examiner's answer. page 34.

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Claims 12 and 27

Claim 12 requires that "entries to be added, modified, or deleted are determined from the distribution or nature of availability queries posed to the cache." Filepp teaches that objects are updated based on storage characteristics in the header, specifically, "Thereafter, a single byte; i.e., byte 16, is allocated to identify the storage characteristic for the object; i.e., the criterion which establishes at what level in network 10 the object will be stored, and the basis upon which it will be updated. At least a portion of this byte; i.e., the higher order nibble (first 4 bits reading from left to right) is associated with the last byte; i.e., byte 18, in the header which identifies the version of the object, a control used in determining how often in a predetermined period of time the object will be updated by the network."[52]

Filepp neither describes nor suggests that objects in cache 439 are proactively updated nor that updating is predicated on "the distribution or nature of availability queries posed to the cache."

Claims 13-16 and 28-29

In answer to Appellant's argument for claim 13, the examiner takes the position that the LRU algorithm for deleting objects in the cache disclosed by Filepp corresponds to a predictor or model of availability queries which are likely to be posted or are likely to be useful. An LRU algorithm, while arguable based on an underlying assumption that the least recently used object is less likely to be used or to be useful in the future, is neither a predictor nor a prediction. Moreover, even assuming *arguendo* that the LRU is a prediction, the claim specifies that the predictor or model is of the availability queries not of the cached object as that teaching in Filepp is directed to.

Claims 14-18 and 29

Regarding claim 14, a similar analysis holds in that as in claim 13 above, since the LRU is neither a predictor or model based on a deterministic, probabilistic, or statistical classifier or predictor, databases or cache of historical data or previously predicted information, simulations of various availability systems and actual availability data sources. Moreover, as with claim 13, the claim requires that the predictor or model is of the availability queries due to its dependence on claim 13, and not of the cached object as that teaching in Filepp is directed to.

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[52] Filepp [0091]

Claim 32

Regarding claim 32, appellant maintains that no combination of Mehovic with Filepp suggests any aspect of "observing and parsing queries made to the cache ... and updating a list of entries queried along with a frequency count tallying the number of times each entry has been accessed and based on frequency of access determining whether the entry should be added or deleted from the cache, whether priority should be raised or lowered to freshen the data for that entry from the availability source more or less often."

The examiner's reliance on Filepp's teaching that "...at [0821] that "when objects are requested from object storage facility 439, only the latest version of the object will be provided to guarantee currency of information to the user.", and subsequent explanation that "This means that the objects in cache 439 are proactively updated, so that in only contains the latest version of the object, before receiving request for the objects."[53], does not imply that Filepp teaches "proactive updating." Again, the examiner's arguments are misdirected in that whether or not Filepp teaches this feature, which Appellant contends Filepp does not for reasons discussed above, the feature nevertheless does not fully address what Appellant has claimed "... observing and parsing queries made to the cache ... and updating a list of entries queried along with a frequency count tallying the number of times each entry has been accessed and based on frequency of access determining. "

Claims 4 and 22 are patentable over Mehovic in view of Filepp and Khosravi-Sichani.

Appellant stands by the arguments presented in the Appeal Brief.

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[53] Id. page 35.

For these reasons, and the reasons stated in the Appeal Brief, Applicant submits that the final rejection should be reversed.

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Respectfully submitted,

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